SOV/109-59-4-2-17/27

AUTHOR: Lunacharskiy, M.N.

TITLE: Influence of an External Electromotive Force with Periodically Varying Parameters on an Oscillatory System (Vozdeystviye eds s periodicheski menyayushchimisya parametrami na avtokolebatel'nuyu sistemu)

PERIODICAL: Radiotekhnika i Elektronika, 1959, Vol 4, Nr 2, pp 286-294 (USSR)

ABSTRACT: The effect of an external emf on an oscillatory system can be described by:

$$\frac{dU}{dt} = \delta(U)U + \frac{\omega_0 E}{2}\sin\varphi \qquad (1)$$

$$\frac{d\varphi}{dt} = \Delta\omega + \frac{\omega_0 E}{2U}\cos\varphi \qquad (2)$$

where U denotes the amplitude of the oscillations of the system, φ is the phase difference between the emf and the oscillations of the system, ω_0 is the natural frequency of the oscillations of the system, E is the amplitude of the emf, $\Delta\omega$ is the frequency difference between the emf and the oscillations and δ is the average damping

Card 1/4

Influence of an External Electromotive Force with Periodically Varying Parameters on an Oscillatory System

coefficient of the system. By introducing a variable y defined by Eq (3) into Eq (2), this latter can be written as Eq (4), where p and q are certain periodic functions having a period t; p and q are defined by Eq (5) and (6). Eq (4) is an equation of the Riccati type. If x(t) is a certain particular solution of Eq (4), this can be written as Eq (7). If within the interval $o < t < T$, the solution of Eq (4) is given by a series of functions $y_k(t)$, as defined by Eq (8), Eq (4) can also be written as Eq (9). Under the assumption that the expression for $y_k(t)$ is in the form of Eq (10), it is possible to rewrite Eq (9) in the form of Eq (11). The solution of Eq (11) for the interval from o to T is in the form of Eq (14), provided the boundary conditions expressed by Eq (13) are fulfilled. Eq (14) leads to Eq (15) in which V and W are defined by Eq (16) and (17). Eq (15) can also be written as Eq (18), where various parameters are defined by Eq (19). The condition of the existence of a steady-state solution of Eq (18) can be represented in the form of Eq (23). From this it follows that the

Influence of an External Electromotive Force with Periodically Varying Parameters on an Oscillatory System

limits of the pull-in bandwidth of the system are given by Eq (24). From Eq (18) it is seen that, in order to obtain the quantity u_k, it is necessary to carry out a k-times transformation of the quantity u_0. These transformations are defined by Eq (25), (26) and (27). Consequently, the parameter A can be found from Eq (31). A general solution of this equation is in the form of Eq (32). If s_1 and s_2 in Eq (32) are complex, no pull-in effect is observed. In the case when the external signal is in the form of a train of coherent pulses, the solution of Eq (7) is given by Eq (37); this is valid for the interval from 0 to $(T-\tau)$. For the interval from $(T-\tau)$ to T the solution of Eq (7) is in the form of Eq (39). From Eq (37) and (39) it is possible to evaluate all the parameters which determine the pull-in bandwidth of the system. The boundaries of the bandwidth are defined by the four expressions represented by Eq (41). The author expressed his gratitude to Professor Ya.S.Itskhoki for his constant

Influence of an External Electromotive Force with Periodically Varying Parameters on an Oscillatory System

interest in this work. After the preparation of the paper, an article by Zanadvorov (Ref 10) appeared in which the problem of the synchronization of an oscillator by a periodic train of pulses was considered. This does not disqualify in any way the author's results. There is 1 figure and 10 Soviet references.

SUBMITTED: 3rd April 1957

Card 4/4

DAVID, Alois, MUDr.; DRDKOVA, Sona, MgMat.; LUNACKOVA, Eva

Blood serum precipitation reaction with picric acid. Pracovni lek. 8 no.6:406-408 Dec 56.

1. Klinika a Ustav chorob v z povolani a hygieny prace, prednosta prof. MUDr. Jaroslav Teisinger.
(BLOOD PROTEINS,
precipitation by picric acid (Cz))
(PICRATES, effects,
blood protein precipitation (Cz))

LUNAK, J.

Economic effectiveness of the two-shift and three-shift operation in plants producing prefabricated elements.
Stavivo 42 no.4:138-141 Ap '64

1. Research Institute of Mechanization, Prague.

LUNAK, OLDRICK

CZECHOSLOVAKIA/Chemical Technology - Chemical Products and Their Application. Electrochemical Production. Electrodeposition. Chemical Sources of Current. H-12

Abs Jour : Ref Zhur - Khimiya, No 17, 1958, 58006

Author : Kubes Jaroslav, Lunak Oldrich
Inst : -
Title : Special Properties of a Galvanized Element.

Orig Pub : Sdelovaci techn., 1956, 4, No 3, 80-82

Abstract : Investigated were cases of the use of a galvanized element as the source of current, resistance and as a condensor.

Card 1/1

L 12938-63 EWP(j)/BDS AFFTC/ASD Pc-4 RM

ACCESSION NR: AP3000078 Z/0009/63/000/005/0270/0274

59
58

AUTHOR: Lunak, Stanislav; Lysy, Jan

TITLE: Electroinsulating varnishes on the basis of polyesters of terephthalic acid

SOURCE: Chemicky prumysl, no. 5, 1963, 270-274

TOPIC TAGS: electroinsulating varnish, polyterephthalate, heat resistance, epoxy resin, electric motor, varnish, resin

ABSTRACT: Three electroinsulating varnishes on the basis of polyterephthalates have been developed: Polyter CHS 60 I, Polyter CHS 55 P, and Polyter CHS 50 S. Polyter CHS 60 I, an impregnating varnish for electric motors, and Polyter CHS 55 P, a varnish for gluing of laminates, are mixtures of polyesters of terephthalic acid with glycol and glycerine, a low molecular epoxy resin, and a melaminformaldehyde resin in a cyclohexanon-xylenebutanol solvent. The varnishes contain zinc naphthenate as hardener. Polyter CHS 50 S, a varnish for coating glass-insulated wires, is a solution of terephthalic polyester with an organometallic Ti compound. Extensive laboratory and performance tests in several Czechoslovak electric-equipment plants showed that the varnishes are

Card 1/2

L 12938-63
ACCESSION NR: AP3000078

permanently heat-resistant at 155C and have satisfactory mechanical and electrical properties. Their use will make it possible to reduce the size of electric motors and to extend their service life. Orig. art. has: 7 tables and 4 figures.

ASSOCIATION: Vyzkumny ustav syntetickych pryskyric a laku, Pardubice (Research Institute for Synthetic Resins and Varnishes, Pardubice)

SUBMITTED: 01Jul62	DATE ACQ: 17Jun63	ENCL: 00
SUB CODE: MA	NO REF SOV: 000	OTHER: 008

Card 2/2

LUNARSIKY, G.

"Handmade Drive for a Dial," Radio, No. 1, 1948.

L 07856-67 EWT(1) GW

ACC NR: AP6028035 (N) SOURCE CODE: UR/0025/66/000/005/0051/0051

AUTHOR: Zatonskiy, L. (Research associate); Lunarskiy, G. (Research associate)

ORG: Institute of Oceanography (Institut okeanologii)

17
B

TITLE: Operating principle of the sonic depth finder

SOURCE: Nauka i zhizn', no. 5, 1966, 51

TOPIC TAGS: underwater sound equipment, OCEAN FLOOR TOPOGRAPHY

ABSTRACT: Sonic depth finders with automatic depth recorders are used for obtaining continuous profiles of oceanic topography. The equipment essentially consists of a vibrator-transmitter and -receiver which converts the return signals to electric impulses, amplifiers and a recording device. The type FTAK-2P phototelegraphic recording apparatus "LADOGA", which determines the time between sending of the impulse and return of the signal from the bottom of the sea has been in use since 1960. "LADOGA" was designed to make more accurate measurements and provide an increased number of recordings. Sounding patterns of depths up to 375, 500 and 750 m can be recorded depending on the speed of the rotating drum. These sounding patterns are then deciphered and corrections are made, e.g. for the speed of sound in sea water, in order to construct a profile of the bottom. Orig. art. has: 4 figures.

SUB CODE: 20,08/ SUBM DATE: none

Card 1/1 bc

LUNARSKIY, G. N.

Papers submitted for the 10th Pacfic Science Congress, Honolulu, Hawaii 21 Aug-6 Sep 1961.

KOLESNIKOV, A. G., PIVOVAROV, A. A., and IVANOVA, Z. S., Moscow State University, Physical Faculty, Chair of Marine Physics and Terrain Waters - "On the calculation of rate of radioactivity spreading in depths" (Section VII.B.6)

KOLTUN, V. M., Institute of Zoology - "The method of spicule analysis and possibilities of its use in paleogeographical studies of the Pacific Ocean" (Section III.C)

KORENEVA, Ye. V., Institute of Geology - "Distribution of spores and pollen of terrestrial plants in bottom sediments of the Pacific" (Section III.A)

KORT, V. G., Director, Institute of Oceanology - "The heat exchange between the Antarctic waters and the adjacent oceanic waters" (Section VII.D.1)

KOSHLYAKOV, M. N., Institute of Oceanology - "An example of the computation of the deep currents in the northeastern Pacific" (Section VII.B)

KOZLYANINOV, M. V., and KOBLENTS-MISHKE, Olga I., Institute of Oceanology - "The interrelation between turbidity, phytoplankton and primary production" (Section III.C.4)

KOZLYANINOV, M. V., Institute of Oceanology - "On the relation between water transparency and the character of currents in some areas of the Pacific Ocean" (Section VII.B)

KOZMINSKAYA, Irina P., KRAKSHINA, R. M., VEYTSMAN, P. S., ZVEREV, S. M., DAVYDOVA, N. I., and GAL'PERIN, B. I., Institute of Earth Physics imeni O. Yu. Schmidt - "Structure of the earth crust in the transition zone from the northwestern part of the Pacific to the Asiatic continent" (Section VII.C.2)

KOZMINSKAYA, Irina P., KRAKSHINA, R. M., and ZVEREV, S. M., Institute of Earth Physics imeni O. Yu. Schmidt - "Specific features of the sedimentary layer in the Okhotsk Sea and in the adjacent parts of the Pacific" (Section VII.C.2)

KOVYLIN, V. M., ZVEREV, S. M., UDINTSEV, G. B., NEPROCHNOV, Yu. P., SISOYEV, N. N., and LUNARSKIY, G. N., Institute of Oceanology - "On the relation between sedimentation and bottom topography in the northwestern part of the Pacific Ocean" (Section VII.C.1)

KROPOTKIN, P. N., Institute of Geology - "The tectonic map of the Pacific Ocean and the circum Pacific mobile belt (scale 1:10,000,000)" (Section VII.C)

LAVRENT'YEV, M. A., and SAVARENSKIY, Ye. F., The Siberian Department of the Academy of Sciences USSR - "On the results of investigations of tsunami in the USSR" (Section V.B.1)

LEONT'YEVA, V. V., Institute of Oceanology - "Hydrological data involved with oceanic troughs in the Pacific and some problems connected with prospect research" (Section VII.B)

LEVIN, M. G., Institute of Ethnology - "Once more on the Ainu problem" (Section II.B)

LISITSYN, A. P., Institute of Oceanology - "The composition of organic suspended material in the Pacific in connection with the problems of sedimentation" (Section VII.C.1)

LISITSYN, A. P., Institute of Oceanology - "Bottom sediments in the Antarctic" (Section VII.D.1)

LUK'YANOV, V. V., Institute of Oceanology - "Cyclonic activity and climatologic fronts in the northern part of the Pacific Ocean" (Section VII.A)

LYUBIMOVA, T. G., All-Union Scientific Research Institute of Marine Fishing and Oceanography - "Some results of icthyological investigations in the gulf of Alaska" (Section III.C)

MAGNITSKIY, V. A., Moscow State University, Physical Faculty, Chair of Hard Crust - "Geophysical data and the problem of the origin of the Pacific Ocean" (Section VII.C.2)

MEDVEDEV, V. S., Institute of Oceanology - "The specific features of beach formation in tidal seas" (Section VII.C.1)

MOKIYEVSKIY, O. B., Institute of Oceanology - "Qualitative-quantitative distribution of the litheral fauna and flora in the northwestern part of the Pacific" (Section III.C)

MURDMAA, Ivan O., Institute of Oceanology - "The process of marine sedimentation in the areas of the Kuril isle arc" (Section VII.C.1)

UDINTSEV, G.B.; LUNARSKIY, G.N.; MARAKUYEV, V.I.; BARINOV, L.G.; SEDEL'NIKOV, V.N.

Use of the "Ladoga" phototelegraph apparatus for recording depth measurements obtained with echo sounders. Okeanologiia 2 no.6:1093-1103 '62. (MIRA 17:2)

1. Institut okeanologii AN SSSR.

NEPROCHNOV, Yu.P.; LUNARSKIY, G.N.

Use of seismoacoustic radiobuoys for the study of crustal structure in the Indian Ocean. Okeanologiia 3 no.1:76-87 '63. (MIRA 17:2)

1. Institut okeanologii AN SSSR.

L 33343-66 EWT(1) GW

ACC NR: AP6007652 SOURCE CODE: UR/0213/66/006/001/0098/0108

AUTHOR: Neprochnov, Yu. P.; Neprochnova, A. F.; Lunarskiy, G. N.; Mikhno, M. F.; Murasidze, G. Ya.; Chichinadze, V. K.

ORG: Institute of Oceanology, AN SSSR (Institut okeanologii AN SSSR); Institute of Geophysics AN GruzSSR (Institut geofiziki AN GruzSSR)

TITLE: Structure of the earth's crust in the eastern region of the Black Sea on the basis of seismic depth soundings

SOURCE: Okeanologiya v.6, no. 1, 1966, 98-108

TOPIC TAGS: earth crust, seismology, hodograph

ABSTRACT: The work was performed using sea and shore recording stations. The Institute of Oceanology's ships "Akademik Vavilov" and "Akademik Obruchev" were used as sea recording stations. The recording devices on both ships included hydrophones with preliminary amplifiers and seismic depth sounding stations designed by the Institute of Physics of the Earth (Institut fiziki zemli), each consisting of two low-frequency amplifiers, two medium-frequency amplifiers, and one sonic amplifier. The hydrophones were submerged to a depth of 80 m. The shore stations were located in Sukhumi and Zugdidi. Explosions of trotyl charges weighing 130 kg were used as a source for seismic waves. Using four recorded wave groups, three sections of the earth's crust were ex-

Card 1/2 UDC: 550.311

L 33343-66

ACC NR: AP6007652 8

plored. The study of seismograms and hodographs disclosed that the three sections crossed heterogeneous zones of complex geological formations. However, positively plot-refracted boundary lines were not sufficiently accurate, although some conclusions about the depth structure of the sections could be made. The cross-section of the earth crust explored consists of sedimentary and "basaltic" beds. Eastward lies a "granitic" bed. The most important characteristic of this region's earth structure is the big upheaval of the "granitic" bed, buried under a 4-km mass of sedimentation. It could be considered as a remainder of the trans-Caucasian geoanticline. Another upheaval of smaller size is located in the vicinity of the Gudaut shole. In addition to the authors, G. N. Shchepletsov, G. S. Strizhenok, M. A. Zayonchkovskiy, N. I. Kichin, and others participated in the expedition. The material was processed by A. F. Neprochnova and Yu. P. Neprochnov; the seismogram processing was done at the Zugdidi sea station by G. Ya. Murusidze and V. K. Chichinadze. Orig. art. has: 5 fig. [19]

SUB CODE: 08/ SUBM DATE: 11Nov64/ ORIG REF: 005

Card 2/2

Mathematics 2

P.T.A.

533.6

242

Lunc M., Dr. **Molecular Aerodynamics.**

„Aerodynamika molekularna". Technika Lotnicza. No 2, 1950, pp. 39—52, 9 figs.

Contradictions in classical aerodynamics (aerodynamics of homogenous fluids). Qualitative foundations of the kinetic theory of gases. The necessary corrections to be introduced into classical aerodynamics in order to allow for the non-homogeneity of gases. Equations of motion in classical aerodynamics as deduced from the elementary kinetic theory A new resemblance parameter. The proper molecular aerodynamics. Description of the motion of rarefied gases. Resistance of moving bodies. Sliding motion. Experimental methods Ion-propulsion and a description of an ion-propulsion tunnel. The possibilities of flight in the ionosphere. The article constitutes an extension of the article „Aerodynamique Moléculaire". by the same author, which appeared in the periodical „La Recherche Aeronautique" No 7 and No 8 (1949).

LUNC, Michal

600

O Siłach Występujących w Bezcyrkulacyjnym Ruchu Płaskim Cieczy Doskonałej Dookoła Profilu o Kształcie Zmiennym (Teoria Wiosłującego Ruchu Doskonałego). Michał Lunc. *Arch. Mech. Stosowanej* (Warsaw), No. 2, 1953, p. 167. In Polish; abridged in Russian. Theoretical study of the forces operating about variable round profiles in a time-dependent, steady, noncirculatory, ideal flow.

LUNC, M.

Dynamika Aerosoli (La Dynamique des Aérosols). H. Tarzyna and M. Lunc. *Arch. Mech. Stasowanej* (Warsaw), No. 3, 1953, p. 311. In Polish; abridged in French and Russian. Extension of the equations of the dynamic flows of gases to analyze the movement of the "ideal" aerosol.

4 (2) 0

10-4-54

LUNC, M.

3

(2)

. Teoria Napedu Odrzutowowodnego Dwuczynnikowego (La Théorie de la Propulsion Hydraulique à Réaction à Deux Fluides). M. Lunc and A. Szaniawski *Arch. Mech. Stosowanej* (Warsaw), No. 4, 1953, p. 490. In Polish; abridged in French. Theoretical study of hydraulic propulsion of two compressible flows with heat; calculation with diagrams, to solve the thermal and flow problems.

10/11/54 LM

LUNC, M.

O Procesach Wymiany Ciepła w Poruszającym się Aerozolu (Sur le Processus d'Échange de Chaleur dans un Aérosol en Mouvement). H. Jarzyna and M. Lunc. *Arch. Mech. Stosowanej* (Warsaw), No. 2, 1954, p. 305. In Polish, with summaries in French and Russian. Study of the heat-transfer problem of an aerosol in motion for the particular case of an aerosol crossing a surface of discontinuity or a shock wave.

Lunc, Michał; et Luboński, Jan. Sur une solution approchée du problème de l'écoulement d'un gaz raréfié autour d'un obstacle. Arch. Mech. Stos. 8 (1956), 597–616.

On a Solution Approaching the Problem of the Flow of a Rarified Gas Around an Obstacle.

POLAND/Atomic and Molecular Physics - Gases D-7

Abs Jour : Ref Zhur - Fizika, No 10, 1958, No 22649

Author : Lunc, Michal
Inst : Polish Academy of Sciences, Warsaw
Title : Determination of the Distribution Function of Molecular Velocities of Gas in the Stationary Mode by Demographic Means.

Orig Pub : Arch. mech. stosowanej, 1957, 9, No 6, 731-737

Abstract : The distribution function of molecular velocities is represented as a result of a displacement, by a "maxwellian" method, of the molecules that "arise" in different points of space. The problem reduces to determination of three function, which depend exclusively on the coordinates and which determine the "speed of occurrence" of molecules at different points of space. The general principles of mechanics and boundary equations are used to determine those three functions.

Card : 1/1

LUNC, M

H

POLAND/Electronics - Electrical Discharges in Gases and Gas Discharge Apparatus.

Abs Jour : Ref Zhur Fizika, No 1, 1960, 1517

Author : Lunc, M., Lubonski, J.

Inst : Institute of Basic Technical Problems, Academy of Sciences, Poland

Title : Rarefied Electrically Charged Gas in Magnetic Fields. I. General Equations. Distribution of Density.

Orig Pub : Bull. Acad. polon. sci. Ser. sci. techn., 1958, 6, No 4, 229-234, XVIII

Abstract : A theoretical investigation was made of a gas consisting of identically charged particles, placed in a homogeneous magnetic field, parallel to an unlimited plane wall. The interaction between the particles was not taken into account. It is found that the

Card 1/2

LUNC M.

POLAND/Electronics - Electrical Discharges in Gases and Gas Discharge Apparatus. H

Abs Jour : Ref Zhur Fizika, No 1, 1960, 1518

Author : Lunc, M., Lubanski, J.

Inst : Institute of Fundamental Technical Problems, Academy of Sciences, Poland

Title : Rarefied Electrically Charged Gas in Magnetic Field. II. Distribution of Intensity of Particles Flow

Orig Pub : Bull. Acad. polon. sci. Ser. sci. techn., 1958, 6, No 5, 255-256, XX

Abstract : The problem is solved of the distribution of the density of the electric current, produced by guided motion of charged particles at different distances from an infinite plane, bounding the region of the space, fully occupied by the ionized gas, in the

Card 1/2

LUNC, M.

POLAND/Electronics - Electrical Discharges of Gases and Gas Discharge Apparatus. H

Abs Jour : Ref Zhur Fizika, No 1, 1960, 1519

Author : Lunc, M., Lubonski, J.

Inst : Institute for Fundamental Technical Problems, Polish Academy of Sciences,

Title : Rarefied Electric Charged Gas in Magnetic Field. III. Gas Between Two Identical Plane-Parallel Walls

Orig Pub : Bull-Acad. polon. sci. Ser. sci. techn., 1958, 6, No 5, 257-260, XX-XXL

Abstract : An investigation is made of the properties of ionized gas, contained in the volume bounded by two parallel planes and located in the magnetic field. All the physical properties of both planes are assumed to be identical. The distributions of the density and

Card 1/2

LUNC, Michal

Transport equations of molecular quantities of the entropic type. Archiw mech 14 no.3/4:561-564 '62.

1. Division de Mechanique des Fluides, Institut des Problemes Fondamentals Techniques, Academie Polonaise des Sciences, Varsovie.

LUNC, M.; NOWAK, H.; SMOLENSKI, D.

Accelerator for jets formed by shaped charges. Bul Ac Pol tech 12 no.5:355-357 '64.

1. Institute of Nuclear Research, Warsaw, and University of Warsaw (for Lunc). 2. Technical University, Warsaw (for Smolenski).

L 05221-67
ACC NR: AP6027427 SOURCE CODE: PO/0095/66/014/006/0603/0606

AUTHOR: Lunc, M. -- Lunts, M.; Statuch, J. -- Statukh, Ya.

ORG: Institute of Nuclear Research, Swierk-Warsaw (Instytut Badan Jadrowych)

TITLE: Behavior of some solid bodies under the influence of instantaneous concentration of high energy

SOURCE: Polska akademia nauk. Bulletin. Serie des sciences techniques, v. 14, no. 6, 1966, 603-606

TOPIC TAGS: graphite, superhigh pressure, detonation wave, shaped charge

ABSTRACT: Specimens of various materials including nickel, iron, zinc, lead, aluminum and carbon were subjected to ultrahigh pressure produced by simultaneous detonation of two shaped charges, one at each end of the specimen. Pulverized graphite subjected to this type of compression adheres tightly to the walls of the container and shows a cavity close to the axis. Graphite with an initial density of 1.65 g/cm^3 was compressed to 2.16 g/cm^3. The specimens showed holes caused by the explosive expansion of the compressed material after the action of the detonation wave stops. Experiments with lead showed complete dispersion. Compression of the specimens produces high temperatures resulting in melting and bubbling of the material. Orig. art. has: 6 figures.

SUB CODE: 20/ SUBM DATE: None/ OTH REF: 001

Card 1/1

LUNCA, N.

Tehnica insamintarilor artificale ia animalele domestice (Ed. 3)

Bucuresti, Rumania - Editura Agro-Silvica de Stat, 1955. 223 p.

Monthly list of East European Accessions (EEAI) LC Vol 8, No. 6, June 1959
Uncl.

LUNCA, N.

LUNCA, N. Fecunditatea si prolificitatea la animalele domestice. Bucuresti, Agro-Silvica, 1956. 46 p. (Bucharest. Societatea pentru Raspindirea Stiintei si Culturii. Colectia, no. 193) "Fecundity and prolificness of domestic animals"

DA Not in DLC

AGRICULTURE
RUMANIA

So: East European Accession Vol. 6, No. 5, May 1957

RUMANIA / Farm Animals, Cattle (Small) Q-3

Abs Jour: Ref Zhur-Biol., No 2, 1958, 7187

Author : N. Lunca, S. Timariu., I. Dumitrescu. Ye. Miasnikov, N. Vermesanu.
Inst : Not given
Title : Stimulation of Lactation in Sterile Cows With Sintofolin.

Orig Pub: Probl. zootehn. 1957, No 2, 11-17

Abstract: A Daily introduction of 2-2.5 milligrams of sintofolin for eight days, followed by injections of the same dosage for 10 days, at intervals of one to two days, produce normal lactation in sterile cows.

Card 1/1

LUNCA, N.

Q

RUMANIA/Farm Animals. General Problems.

Abs Jour: Ref Zhur-Biol., No 4, 1958, 16719.

Author : Gligor V., Lunca N.
Inst : A New Orientation in the Organization of the Artificial Insemination of Farm Animals (Novaya oriyentatsiya v organizatsii iskusstvennogo osemeneniya sel'skokhozyaystvennykh zhivotnykh

Orig Pub: Probl. zootehn., 1957, No 5, 5-12.

Abstract: In 1956, in Rumania 1,446 stations of artificial insemination were in operation and 1,300,000 sheep were inseminated. On the average, 87 percent of fertilizations were achieved. The artificial inseminations of cows were unsatisfactorily organized. By the semen of one sire, only 100-150 cows were inseminated. In order to improve the

Card : 1/2

Q

RUMANIA/Farm Animals. Cattle.

Abs Jour: Ref Zhur-Biol., No 17, 1958, 78743.

Author : ~~Lungu, N.;~~ Ionescu, C.; Slavescu, E.; Eger, E.

Inst :

Title : Results Obtained in Several Stations for Artificial Insemination in Cluj Region.

Orig Pub: Probl. zootechn., 1957, No 6, 55-57.

Abstract: Artificial insemination of cows was conducted for the first time in the rayons of Dzhilau, Zhibou and Zalets. Bulls 2 to 8-9 years old served as sires. The percentage of fertilization for three years comprised on the average 74.5, 66.73 and 69.77%. Fertility of cows under artificial insemination equaled 78-73%; the litter was

Card : 1/2

28

COUNTRY : RUMANIA
CATEGORY : Farm Animals.
Pig Swine.
ABS. JOUR. : RZhBiol., No. 2, 1959, No. 12077
AUTHOR : Osol, V.; Lunca, P.; Sratescu, I.; Bica, M.;*
INST. : -
TITLE : The Termination of Sexual Ardor in Pigs with the Aid of Diacetate Hexestrol.
ORIG. PUB. : Probl. zootehn. si veterin., 1958, no 1, 47-51
ABSTRACT : In order to terminate sexual ardor in fattening pigs, three series of experiments were performed in which the effect of the drug "Sircofolin" in the form of subcutaneous injections was tested. The hormone was given once in a dose of 30-40 mg regardless of the sexual cycle's phase. After 24-48 hours signs of a sharply pronounced sexual ardor were found in all pigs which disappeared 2-3 days later for a lengthy period of time (3-4 months).

CARD: 1/2 *Slavescu, E.; Popovici, P.

83

RUMANIA

LUNCA, N., Lect, Dr, Doctor of Veterinary Sciences (Doctor in Stiinte Veterinare) of the Zootechnical Research Institute (Institutul de Cercetari Zootehnice).

"Breeding Diseases and Functional Sterility in Domesticated Animals."

Bucharest, Revista de Zootehnie si Medicina Veterinara, Vol 13, No 8, Aug 63, pp 13-22.

Abstract [Author's English summary modified]: An analysis of the various types of sterility in domestic animals. Hereditary sterility accounts for an average of 6 percent of cases (range 2 to 10 percent) while about 85 to 90 percent of cases involve late-developed sterility. Among these, functional sterility is most frequent (40 to 64 percent) while sterility caused by disease, injuries, etc. has a frequency of 25 to 35 percent. Pseudosterility reaches as high as 8 to 10 percent in some farms. Proper conditions of feeding, stabling, exploitation etc. together with therapeutic hormone treatment can return to production about 70 to 80 percent of the animals with functional sterility.

Includes 1 graph and 13 references, of which 4 American, 1 Italian, 2 Russian and 6 Rumanian.

1/1

BIRGACANU, P., lector; LUNGAN, R., prof. (Bucharest)

Curricula and textbooks on geography in Rumania. Natura Geografie 16 no.5:59-64 S-O'64

VULCU, Bujor, prof.; LUNCAN, Radu, prof.; VULCU, Lucia, prof.

Using data of documents of the 3d Congress of the Rumanian Workers Party for teaching the geography of Rumania. Natura Geografie 12 no. 6:111-118 N-D '60.

LUNCAN, R., prof. (Bucuresti)

The relief and riches of the European subsoil. Natura Geografie 15 no.4:54-55 Jl-Ag '63.

LUNCAN, R., prof. (Bucuresti); MARGESCU, C., prof. (Lehliu-Gara, Regiunea Bucuresti)

Necessary apparatus in teaching geography, constructed by local means. Natura Geografie 15 no.4:60-65 Jl-Ag '63.

LUNCAN, Radu (Bucuresti)

"Across the U.S.S.R." by Demostene Botez. Natura Geografie 15 no.1:83-84 Ja-F '63.

[redacted], LUNCZ, GEZA.

5
8
8
0

5.6-184 551.556.2:551.584

Lúnce, Géza. A mezővédő erdősávok éghajlati hatásának mérése 1951-ben. [Measurement of the climatic effect of shelter belts in 1951.] *Időjárás*, 56(9/10):285–295, Sept./Oct. 1952. 17 figs. Russian and French summaries p. 326–327. DLC—Micrometeorological measurements conducted intermittently since Feb. 1951 by the Hungarian Forestry Science Institute are reported. Wind speed and direction, evaporation, relative humidity, soil moisture and air and soil temperature data were obtained on several occasions during 2–5-day periods on both sides of three shelter belts of different type and orientation. Results of these measurements and also of crop yield are graphically represented as functions of distance from the shelter belts. The author offers advice on methods to be adopted in the further pursuit of the project. *Subject Headings:* 1. Shelter belt effects 2. Microclimatic data 3. Hungary.—*G.F.*

46

CZECHOSLOVAKIA

LUND, H.

Department of Chemistry, University of Aarhus, Denmark

Prague, Collection of Czechoslovak Chemical Communications, No 12, December 1965, pp 4237-4249

"Polarographic and electropreparative reduction of 1(2H)-phthalazinones, 2,3-dihydro-1,4-phthalazinediones, and related compounds."

(Forthe 75th birthday of Academician J. Heyrovsky).

LUND, H.

CZECHOSLOVAKIA

LUND, H

Department of Chemistry, University of Aarhus, Aarus, Denmark

Prague, Collection of Czechoslovak Chemical Communications, No 10, October 1966, pp 4175-4177

"Polarography and reduction of a diazirine."

PFLUG, Josef, MUDr.; LUNDA, Otakar, MUDr.

Epicondylitis humeri. Acta chir. orthop. traum. cech. 22 no.6: 222-227 Nov 55.

1. Chirurgicke oddeleni OUNZ Susice, primar MUDr. Josef Pechmann, a chirurgicke odd. polikliniky fakult. nemocnice v Praze II, prednosta prof. MUDr. Vaclav David.
(HUMERUS, diseases,
epicondylitis)

LUNDA, Otokar; PECH, Rudolf

Early detection of breast tumors using systematic diagnostic-therapeutic technic. Cas. lek. cesk. 95 no.23-24:618-626 15 June 56.

1. Z poliklin. II. chir., kliniky v Praze, pred. akad. Jiri Divis. zastupce prednosty pro ambulantni slozku prof. Dr. Vaclav David O.L., P.-Holesovice, Letohradska 10.
(BREAST, neoplasms,
mass surveys (Cz))

SOSKIN, Il'ya Moiseyevich. Prinimala uchastiye ROZOVA, L.V.; LUNDBERG, O.L., otv. red.; NEDOSHIVINA, T.G., red.; BRAYNINA, M.I., tekhn. red.

[Changes in the hydraulic characteristics of the Baltic Sea observed over a period of many years] Mnogoletnie izmeneniia gidrologicheskikh kharakteristik Baltiiskogo moria. Leningrad, Gidrometeoizdat, 1963. 159 p. (MIRA 16:5)
(Baltic Sea--Hydrology)

LUNDBERG, O. R.

USSR/Physics of the Hydrosphere - Dynamics of Sea and Land Water, N-2

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 36253

Author: Lundberg, O. R.

Institution: None

Title: Variation of Tide-Ebb Flow as Function of Astronomical Conditions

Original Periodical: Trudy Gos. okeanogr. in-ta, 1955, No 30, 199-220

Abstract: Description of an investigation on the variability of the tide-ebb flow as a function of the phase, declination, and parallax of the moon. These variations vary to an exceeding amount, but during a month of a year they occur in a definite sequence. The variations noted in the first half year repeat with a 12-hour shift during the second half year. This law makes [redacted]e to reduce by 1/2 the computations of the tide-ebb flows for the entire year. Using 19-years' observation materials the long-term course of the variations of the characteristic, necessary for the precalculation of the tide-ebb flow, are given. It is noted that in the case of complicated

Card 1/2

USSR/Physics of the Hydrosphere - Dynamics of Sea and Land Water, N-2

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 36253

Abstract: tides, reliable navigational characteristics of the tide-ebb flow can be obtained only on the basis of the harmonic constants, calculated from materials of many years' observation.

Card 2/2

LUNDBERG, O.R

124-57-1-570

Translation from: Referativnyy zhurnal, Mekhanika, 1957, Nr 1, p 72 (USSR)

AUTHORS: Pervunina, T.P., Zhukova, K.V., Lundberg, O.R.

TITLE: Practical Hints on the Harmonic Analysis of Daily Tidal-flow Observations (Iz opyta garmonicheskogo analiza sutochnykh nablyudeniy nad techeniyami)

PERIODICAL: Tr. Gos. okeanogr. in-ta, 1955, Nr 30, pp 226-241

ABSTRACT: The authors propose a number of qualitative concepts regarding the processing of observational data on tidal currents. In addition thereto, the paper adduces appraisals of the astronomical circumstances at observation time, also examples and the harmonic analysis of the diurnal and semidiurnal tidal currents and methods for the selection of the harmonic constants.

A.S. Sarkisyan

1. Oceanography 2. Astronomy 3. Tides--Tables 4. Tides--Analysis

Card 1/1

AUTHOR: Lundberg, O.R. 50-58-3-10/22

TITLE: The Possibility of Representing the Characteristic Flood-Tide Flows by Harmonic Constants (Vozmozhnosti kharakteristiki prilivnykh techeniy po garmonicheskim postoyannym)

PERIODICAL: Meteorologiya i Gidrologiya, 1958, Nr 3, pp 43-45 (USSR)

ABSTRACT: Any tidal curve observed can be represented as a trigonometric series which is the sum of a certain number of sinusoidal functions. The harmonic constants of any component are a qualitative characteristic of the sinusoidal functions. The characteristic elements of an ellipse that correspond to the individual components of a flood-tide flow are now represented in form of harmonic constants of the flood-tide flow. From the harmonic constants of the flood-tide flow it is possible to draw conclusions as to the characteristic features of each of the component. There is 1 table.

Card 1/1 1. Floods--Analysis 2. Mathematics

LUNDBERG, O.R.

Possibility of basic long-range flood forecasts for Leningrad. (MIRA 13:4)
Trudy GOIN no.37:53-58 '59.
(Leningrad--Floods)

LUNDBERG, O.R.

Determining the coefficient of vertical temperature conductivity by changes in the temperature of the water of the Baltic Sea. Trudy GOIN no.81:94-105 '64. (MIRA 17:11)

DITYATKOVSKIY, Yefim Moiseyevich; LUNDEN, Ye.P., red.

[Analysis of the cost of construction and assembly work in construction organizations] Analiz sebestoimosti stroitel'no-montazhnykh rabot v stroitel'nykh organizatsiiakh. Izd.2. dop. i perer. Moskva, Stroiizdat, 1965. 103 p. (MIRA 18:4)

SMORODINSKIY, I.N., inzh.; LUNDEN, Ye.Ye., inzh.

Tower cranes built by French companies at the International Exhibition in Moscow. Stroi. i dor. mash. 10 no.7:29-31 Jl '65. (MIRA 18:8)

LUNDIN, A.B.; KITAYEV, G.A.

Mechanism of chemical precipitation of thin films of lead selenide. Izv. AN SSSR. Neorg. mat. 1 no.12:2102-2106 D '65.

Kinetics of precipitation of lead selenide thin films. Ibid.:2107-2112 (MIRA 18:12)

1. Ural'skiy politekhnicheskiy institut im. S.M. Kirova.
Submitted May 31, 1965.

KHOMCHENKO, G.P.; LUNEV, A.F.; BOGDANOVSKAYA, K.N.

Adsorption properties of rhodium and ruthenium electrodes in relation to the electrolyte. Elektrokhimiia 1 no.11:1352-1355 N '65. (MIRA 18:11)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

L 07822-67 EWT(m)/EWP(t)/ETI IJP(c) JD
ACC NR: AP6034205 (N) SOURCE CODE: UR/0153/66/009/004/0574/0576

AUTHOR: Kitayev, G. A.; Lundin, A. B.; Mokrushin, S. G.

ORG: Department of Physical and Colloidal Chemistry, Ural Polytechnical Institute im. S. M. Kirov (Kafedra fizicheskoy i kolloidnoy khimii, Ural'skiy politekhnicheskiy institut)

TITLE: Chemical deposition of lead selenide thin films

SOURCE: IVUZ. Khimiya i khimicheskaya tekhnologiya, v. 9, no. 4, 1966, 574-576

TOPIC TAGS: lead selenide, semiconducting film, thin film optic coating, chemical deposition, chemical reaction, infrared sensor

ABSTRACT: A chemical method using unsubstituted selenourea as the selenizing agent has been developed for deposition on a glass substrate of mirror-bright, adherent lead selenide thin films of a given thickness up to several thousand angstrom. Development of the method was prompted by the importance of lead selenide films as infrared sensors and by the desirability of a simplified technique of preparation of these films. The films were deposited by the reaction of lead nitrate with selenourea in alkaline solution and in the presence of the citrate or thiosulfate ion, as lead complexing agent, Na_2SO_3 as inhibitor of the selenourea decomposition and hydrazine, ammonia, or potassium hydroxide as pH regulato . Selection of optimum concentrations of the reactants was made on the basis of thermodynamic stability of

Card 1/2 UDC: 539.232

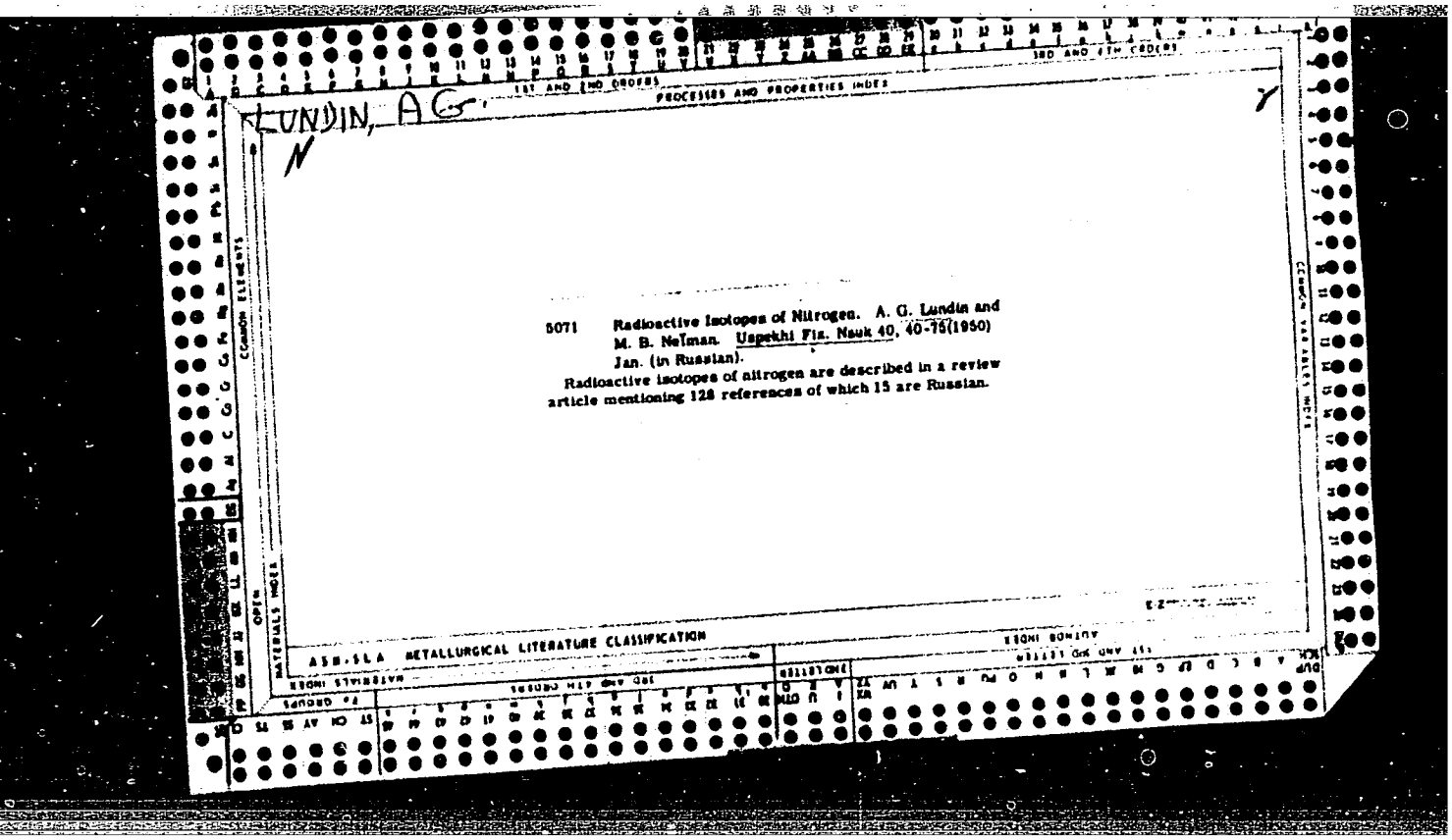
L 07822-67

ACC NR: AP6034205 O

lead hydroxide in the presence of the complexing agent. The region of possible formation of the films was found to be coincident with that of the stability of lead hydroxide and the experimentally determined region of optimum composition to be within the former region. Extremely adherent, mirror-bright, and transparent films, with optic thickness of the order of 6000Å, were obtained from optimized solutions at pH = 7.9—8.2. The nature of the complexing ion and of the alkali was of secondary importance. In opposition to an earlier statement in a Western source, applicability was shown of unsubstituted selenourea to deposition of the lead selenide films. Orig. art. has: 1 figure and 3 formulas.

SUB CODE:: 07 / SUBM DATE: 26Oct64/ ORIG REF: 003/ OTH REF: 004
ATD PRESS: 5101

Card 2/2 bc



GRINCHENKO, I.V.; LUNDIN, A.G.; MIKHAYLOV, G.M.

Installation for studying the magnetic resonance of atomic nuclei.
Trudy Sib.tekh.inst. no.24:1-12 '59. (MIRA 14:3)
(Nuclear magnetic resonance and relaxation)

LUNDIN, A.G.; MIKHAYLOV, G.M.

Determining moisture in wood by a nuclear magnetic resonance method. Trudy Sib.tekh.inst. no.24:30-36 '59. (MIRA 14:3)
(Wood—Moisture) (Nuclear magnetic resonance)

82893
S/120/60/000/02/024/052
E041/E421

24.7900

AUTHORS: Lundin, A.G. and Mikhaylov, G.M.

TITLE: A Spectrometer for Investigating Nuclear Magnetic Resonance in Crystals

PERIODICAL: Pribory i tekhnika eksperimenta, 1960, Nr 2, pp 90-92 (USSR)

ABSTRACT: An important feature of all such instruments is the means adopted to orient the field with respect to the crystal axis. In this version, a horseshoe magnet rotates about the sample. The non-uniformity of the field is less than 0.03 oersted within a 1 cm^3 volume. The magnet gap-width is 35 mm, the effective working area is 225 cm^2. The magnet, wound with 20000 turns of 1 mm dia wire, weighs 500 kg. There are also supplementary windings, of 6000 and 4000 turns of 0.41 mm dia wire, intending for smooth variation of the average value of the field and for modulating its intensity. The pole pieces are 60 mm thick, of CT-3 steel and optically flat. A field of about 4500 oersteds is produced in the gap with a main-winding current of 600 mA. As an antimicrophony measure the magnet,

Card 1/3

A Spectrometer for Investigating Nuclear Magnetic Resonance in Crystals

together with its mounting, is fixed to a concrete base having a volume of 6 m^3. The mounting consists of a circular steel plate and a wagon wheel. The main winding is fed from a commercial rectifier with a UIP -1 electronic stabilizer. The circuit diagram of the spectrometer is in Fig 2. The autodyne oscillator is a triode-connected 6Zh9P pentode with a slope of 25 mA/V. The level of oscillation is stabilized by feedback taken from the detector load. After detection and low-frequency amplification, the signal is passed through a narrow-band (1 c/s) amplifier tuned to 70 c/s. This is followed by a synchronous detector with time-constants of 1 or 10 seconds. The spectra are recorded on a self-balancing potentiometer type EPP-09. Slow variations in field are produced by varying the current in the 6P15P pentode by means of the potentiometer coupled through reduction gearing to the synchronous motor SD-2. The heaters of the oscillator and amplifier valves are fed from an accumulator. Careful electrostatic screening is also necessary around the

82893
S/120/60/000/02/024/052
E041/E421

A Spectrometer for Investigating Nuclear Magnetic Resonance in Crystals

oscillator. Crystals containing hydrogen and fluorine have been investigated in the range of oscillator frequencies 1 to 20 Mc/s. The resolving power for hydrogen in a 3000 oersted field is 300 c/s. Fig 3 shows absorption spectra for monocrystalline rochelle salt when the X-axis of the crystal coincides with the rotation axis of the magnet and the field direction is successively Z and Y. The modulation amplitude was 2 oersted. There are 3 figures and 3 references, 2 of which are Soviet and 1 English.

ASSOCIATION: Institut fiziki Sibirskogo Otdeleniye AN SSSR, Sibirskiy tekhnologicheskiy institut (Institute of Physics of the Siberian Section AS USSR, Siberian Technological Institute)

SUBMITTED: January 23, 1959

Card 3/3

24.6100

78103
SOV/70-5-1-12/30

AUTHORS: Aleksandrov, K. S., Lundin, A. G., Mikhaylov, G. M.

TITLE: Concerning the Distribution of Hydrogen Atoms in the Structure of Guanidine Aluminum Sulfate Hexahydrate

PERIODICAL: Kristallografiya, 1960, Vol 5, Nr 1, pp 84-88 (USSR)

ABSTRACT: The ferroelectric single crystals of $C(NH_2)_3 Al \cdot (SO_4)_2 \cdot 6H_2O$ had in the past been studied by the method of nuclear magnetic resonance, and their symmetry 3m, space group C^2_{3v} - P31m, a = 11.737 A, c = 8.949 A were known as well as the presence of 3 molecular weights per unit cell of octahedral $Al(H_2O)_6$, tetrahedral SO_4, and triangular $C(NH_2)_3$ groups in their structures. Using the same method, the suthors sought to establish the distribution of hydrogen atoms in their structure. The authors reject one of the two possible proton dispositions suggested by R. Spence and J. Muller for

Card 1/5

the guanidine group, and mention D. McCall's data without comment. For their own experiments they used specimens in the form of orthorhombic prisms, $1.5 \times 1.2 \times 1.1$ cm^3, from the crystals transverse to X, Y, Z axes. The absorption spectra from these prisms were obtained by taking measurements after each turn of the magnetic field for 15° around X, Y, or Z axis. The periodicity of the obtained curves was 60° and pointed to the rhombohedral symmetry of crystals. As determined according to the maximum split of absorption lines in a field parallel to Y axis, one of the p - p vectors of the molecules of crystallization water was parallel to the magnetic field and two others under 60° to it. When the magnetic field was parallel to Z axis (3-fold rotor) of the crystal, all the 3 p - p vectors produced equal split of absorption lines, indicating that the

vectors lie on a plane normal to Z. The experiments permitted drawing of the model shown in Fig. 3.

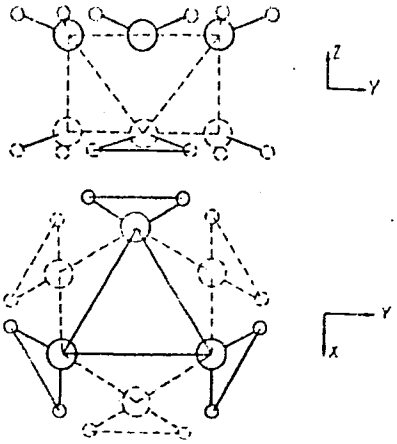


Fig. 3. Model showing distribution of hydrogen atoms (small circles) around oxygen atoms (large circles) which form an octahedron around Al of guanidine aluminum sulfate.

Card 3/5

Concerning the Distribution of Hydrogen Atoms in the Structure of Guanidine Aluminum Sulfate Hexahydrate

78103
SOV/70-5-1-12/30

The bond angle H-O-H is close to 105°; both N - to - H and O - to - H distances are close to 1.00 A, while H - to - H is 1.63 A. The experiments proved that all NH_2 triangles in $C(NH_2)_3$ group lie on one plane. The model still needs refinement. The structure changes accompanying spontaneous polarization and taking place in an applied field are not yet clear. S.P. Gabude is acknowledged for help in calculations and discussions. There are 3 figures; and 8 references, 4 U.S., 3 Soviet, 1 Danish. The U.S. references are: R. Spence, J. Muller, J. Chem. Phys., 26, 3, 706 (1957); D. McCall, J. Chem. Phys., 26, 3, 706 (1957); A. Holden, B. Matthias, W. Merz, J. Remeika, Phys. Rev., 98, 2, 546 (1955); L. Pauling, Nature of the Chemical Bond, Cornell University Press, 1948.

ASSOCIATION: Institute of Physics of the Siberian Branch of the Academy of Sciences of the USSR and Siberian Technological Institute (Institut fiziki Sibirskogo

Concerning the Distribution of Hydrogen Atoms in the Structure of Guanidine Aluminum Sulfate Hexahydrate

78103
SOV/70-5-1-12/30

otdeleniya AN SSSR i Sibirskiy tekhnologicheskiy institut)

SUBMITTED: July 6, 1959

Card 5/5

84997

9.2180

S/048/60/024/010/006/033
B013/B063

AUTHORS: Lundin, A. G., Aleksandrov, K. S., Mikhaylov, G. M., and Gabuda, S. P.

TITLE: Study of Some Piezoelectric Substances by the Method of Nuclear Magnetic Resonance

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960, Vol. 24, No. 10, pp. 1195-1197

TEXT: The application of the method of nuclear magnetic resonance to the study of polycrystalline specimens is dealt with. This method served for examining polycrystalline specimens of Rochelle salt, triglycine sulfate and potassium ferrocyanide. The tests were conducted within a temperature range covering the phase transition points of these substances. For an increase of the signal level, the specimens which had a volume of about 2 cm^3, were pressed by applying a pressure of 100 kp/cm^{-2}. The experimental arrangement is described in Ref. 8. The following results were obtained: Rochelle salt - $KNaC_4H_4O_6 \cdot 4H_2O$: at a temperature of +23°C (Fig. 1, 1) the second moment exhibits a jump of 4 oe^2. This is in agree-

Card 1/2

84997

Study of Some Piezoelectric Substances by the Method of Nuclear Magnetic Resonance

S/048/60/024/010/006/033
B013/B063

ment with the data of Ref. 6. No modification of the second moment was observed in the region of the lower Curie point. Triglycine sulfate - $(NH_3CH_2COO)_3 \cdot H_2SO_4$: Curve 2 (Fig. 1) shows that the second moment retains the same magnitude in a wide temperature range, and amounts to ~ 8 oe^2. Experimental results do not contradict the data of Ref. 10. Potassium ferrocyanide $K_4Fe(CN)_6 \cdot 3H_2O$: The piezoelectric phase transition at -22°C was discovered in 1959 (Ref. 11). Curve 3 (Fig. 1) shows the change of the line width with phase transition. Fig. 2 gives the modification in the form of the resonance line derived on the passage through the Curie point. P. P. Kobeko and I. V. Kurchatov are mentioned. The present paper was read at the Third Conference on Piezoelectricity, which took place in Moscow, from January 25 to 30, 1960. There are 2 figures and 13 references: 4 Soviet.

ASSOCIATION: Institut fiziki Sibirskogo otdeleniya Akademii nauk SSSR (Institute of Physics of the Siberian Branch of the Academy of Sciences USSR)

Card 2/2

LUNDIN, A.G.; MIKHAYLOV, G.M.; GABUDA, S.P.

Studying the reorientation of the guanidinum ion in the ferroelectric $C(NH_2)_3 \cdot Al(SO_4)_2 \cdot 6H_2O$ by the nuclear magnetic resonance method. Zhur. eksp. i teor. fiz. 40 no.5:1282-1288 My '61. (MIRA 14:7)

1. Institut fiziki Sibirskogo otdeleniya Akademii nauk i Sibirskiy tekhnologicheskiy institut.
(Ferroelectric substances) (Guanidinium) (Nuclear magnetic resonance)

26690
S/056/61/041/005/005/038
B104/B108

24.7900 (1144, 1163, 1482)

AUTHORS: Mikhaylov, G. M., Lundin, A. G., Gabuda, S. P.

TITLE: Magnetic resonance of F^{19} nuclei in the $(NH_4)_2BeF_4$ ferroelectric

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41, no. 5(11), 1961, 1370-1374

TEXT: The authors studied the second moment of the nuclear magnetic resonance absorption line of F^{19} in $(NH_4)_2BeF_4$ in the temperature range of from -183°C to room temperature. The second moment of this line is determined by the structure of the crystal and may be calculated by Van Vleck's formula (Phys. Rev., 74, 1168, 1948). The authors assume that the $(BeF_4)^{2-}$ ion is a regular tetrahedron with the Be atom as its center. The distances F-F and F-Be are 2.63 and 1.61 Å, respectively. Moreover, it is assumed that the $(BeF_4)^{2-}$ ions and the $(NH_4)^+$ ions in the structure

Magnetic resonance of F^{19} nuclei...

of $(NH_4)_2BeF_4$ are located just as the $(SO_4)^{2-}$ ions and the $(NH_4)^{+}$ ions in the structure of $(NH_4)_2SO_4$. The second moment of the nuclear magnetic resonance absorption line of F^{19} is shown as a function of temperature in Fig. 1. The change of the second moment in the range from -100 to -20°C is a result of an ordinary rotational transition, connected with a reorientation of the $(BeF_4)^{2-}$ ions around a fixed axis. This axis coincides with the c axis of the crystal. The height of the potential barrier of reorientation as determined from the temperature dependence of the second moment is found to be 9.5 ± 0.4 kcal/mole. B. Mattias and D. Remeyka (Sb. Fizika dielektrikov (Physics of Dielectrics); Gostekhizdat, 1960, p. 305) are mentioned. The authors thank V. A. Koptsik for submitting the crystal investigated, and K. S. Aleksandrov for his interest and valuable advice. There are 3 figures, 1 table, and 12 references: 4 Soviet and 8 non-Soviet. The 4 most recent references to English-language publications read as follows: R. Pepinsky, F. Yona, Phys. Rev., 105,344, 1957; Y. Okaya, K. Vedam, R. Pepinsky. Acta Cryst.

Magnetic resonance of F^{19} nuclei...

11, 307, 1958; R. Blinc, I. Levstek, Phys. and Chem. Solids, 12, 295, 1960, T. P. Das. J. Chem. Phys., 27, 673, 1957.

ASSOCIATION: Institut fiziki sibirskogo otdeleniya Akademii nauk SSSR (Institute of Physics of the Siberian Department of the Academy of Sciences USSR)

SUBMITTED: May 16, 1961

Card 3/4

88408

S/020/61/136/004/021/026
B028/B06

9.4300 (1043, 1137, 1138)

AUTHORS: Lundin, A. G., Mikhaylov, G. M., and Gabuda, S. P.

TITLE: Behavior of Crystal Water in the $K_4Fe(CN)_6 \cdot 3H_2O$ Ferroelectric

PERIODICAL: Doklady Akademii nauk SSSR, 1961, Vol. 136, No. 4, pp. 864-867

TEXT: Monoclinic crystals of this salt have four $K_4Fe(CN)_6 \cdot 3H_2O$ molecules per elementary cell (a=9.32A, b=16.84A, c=9.32A). A study of this salt by the method of the magnetic proton resonance led to the discovery of a considerable change of the second moment of proton absorption lines on the passage through the Curie point. The second moment of absorption lines is given by

$S = \int_{-\infty}^{+\infty} f(H) \cdot (H - H_0)^2 dH$, where f(H) is the normalized function of the line shape, $(H - H_0)$ = difference between magnetic field strength and resonance field strength; it characterizes the interaction of protons in

Card 1/6

Behavior of Crystal Water in the $K_4Fe(CN)_6 \cdot 3H_2O$ Ferroelectric

S/020/61/136/004/021/026
B028/B060

matter, and its change points to a change in the position or in the mobility of the protons. The signal-to-noise ratio was increased by using crystal powder pressed at 150 kg/cm^2 in a cylinder 13 mm in diameter and 20 mm long. Single crystals ($12 \times 6 \times 20 cm^3$ and $12 \times 8 \times 20 cm^3$) were also examined in a special Dewar vessel at temperatures between 77 and 400°K. Absorption spectra were taken at a magnetic field strength H_0 = 3000 oersteds with a change of field strength of 0.0194 and 0.0097 oe/sec. Fig. 1 shows the dependence of the second moment of the lines on temperature, Fig. 2 the proton resonance spectra at various temperatures. The second moment was calculated with $S = S_0 + S_1$; S_0 = intramolecular part, caused by a pair interaction of protons in the H_2O molecule, S_1 = intermolecular part caused by the interaction of "pair" protons with other nuclei which display a magnetic moment. The following relations

hold for polycrystals: $S_o = 358.1 \cdot 10^{-48} r^{-6}$,

$S_1 = 358.1 \cdot 10^{-48} \sum_j r_j^{-6} + \frac{4}{15} \sum_k I_k(I_k+1) g_k^2 \beta^2 r_k^{-6}$, where r = distance in cm

Card 2/6

Behavior of Crystal Water in the $K_4Fe(CN)_6 \cdot 3H_2O$ Ferroelectric

S/020/61/136/004/021/026
B028/B060

between the protons in the H_2O molecule, r_k = distance from other nuclei with spin I_k and the hydromagnetic ratio g_k, r_j = distance from protons of other H_2O molecules, β = nuclear magneton. Fig. 3 shows an absorption line of a $K_4Fe(CN)_6 \cdot 3H_2O$ single crystal at -183°C with a maximum splitting of ΔH_{max} = 21.6 oersteds. The widening of the line peak is mainly caused by intermolecular interaction. The calculation for the intermolecular part gives $S_1 = 0.6 \pm 0.66$ oe^2. S_o calculated on the basis of $\Delta H_{max} = 3\mu r^{-3}$ (μ = magnetic moment of the protons, r=1.575±0.015A) gives 23.5±1.2 oe^2. The second moment of 23.5 oe^2 is typical of the rigid H_2O molecule in the crystal hydrate. There are two reasons accounting for S dropping at -150°C: distance of protons from one another, or appearance of rotational or translational degrees of freedom at the H_2O molecule. Doublet lines disappear at -35°C, which is indicative of the fact that at this temperature all molecules undergo rearrangement. For the "third" water molecule in $K_4Fe(CN)_6 \cdot 3H_2O$, the doublet disappears only at -20°. Near the Curie point, the drop of the potential barrier proves that a rearrangement of the molecules connected with a change of symmetry. The central peak of

88408

Behavior of Crystal Water in the $K_4Fe(CN)_6 \cdot 3H_2O$ Ferroelectric

S/020/61/136/004/021/026
B028/B060

the curve at +60°C is due to self-diffusion of the H_2O molecule. There are 3 figures and 10 references: 4 Soviet, 2 Japanese, and 4 US.

ASSOCIATION: Institut fiziki Sibirskogo otdeleniya Akademii nauk SSSR (Institute of Physics of the Siberian Department, Academy of Sciences USSR). Sibirskiy tekhnologicheskiy institut Krasnoyarsk (Siberian Technological Institute Krasnoyarsk)

PRESENTED: July 21, 1960, by V. N. Kondrat'yev, Academician

SUBMITTED: August 18, 1960

Card 4/6

88408

S/020/61/136/004/021/026
B028/B060

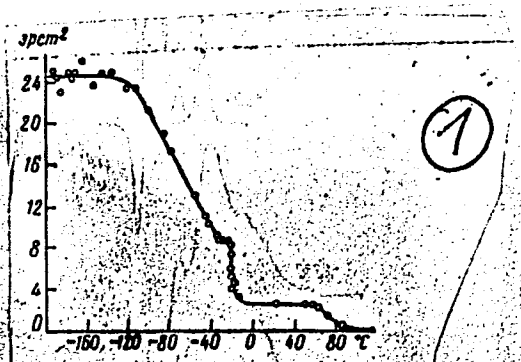
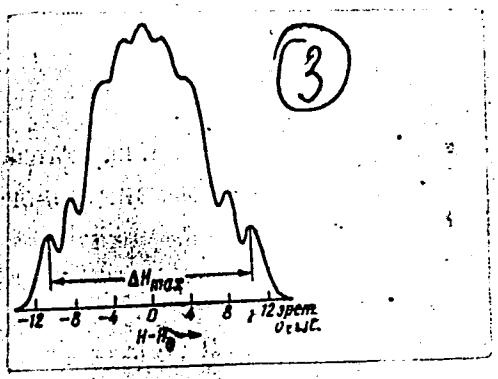
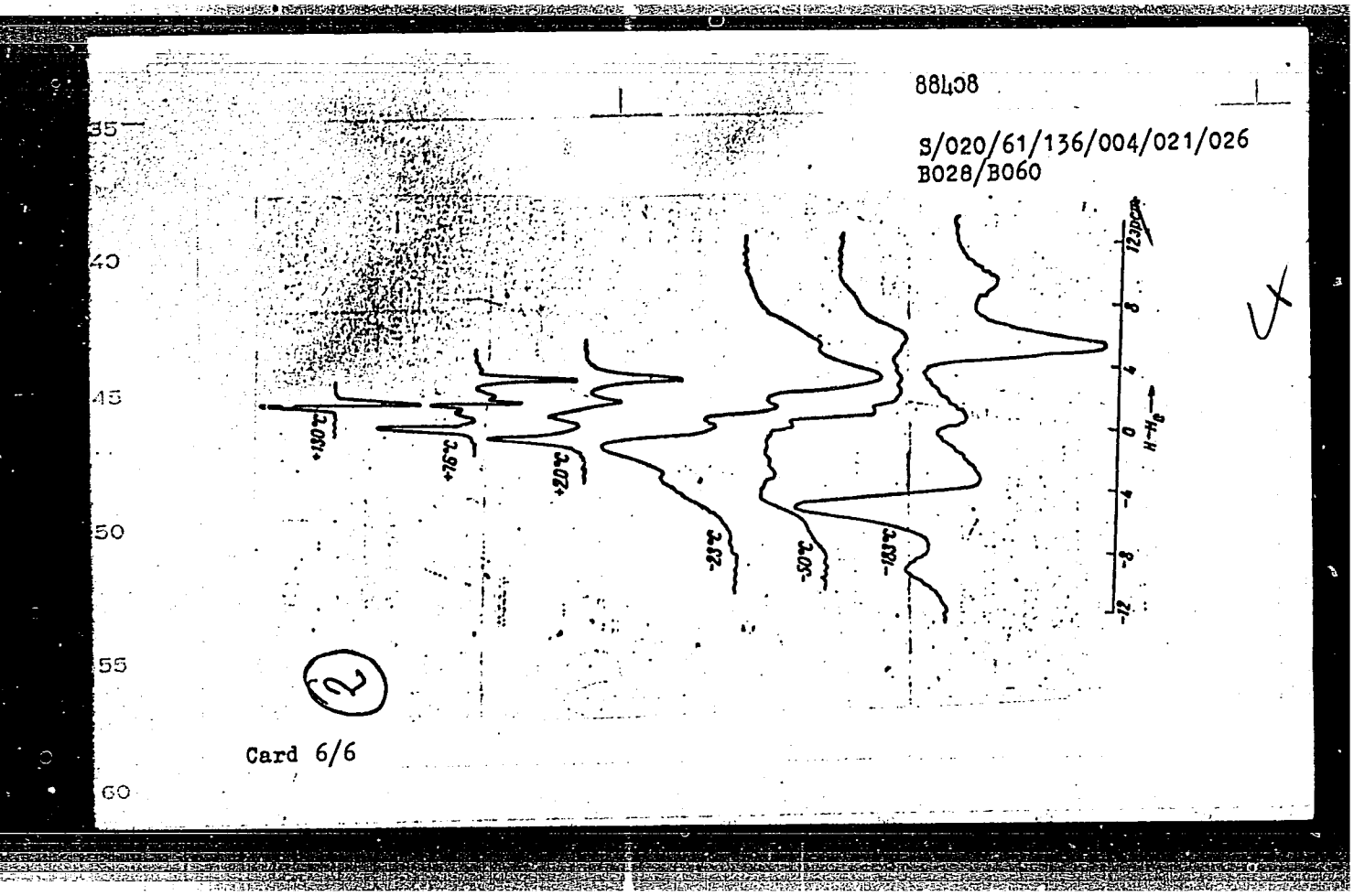


Рис. 1. Температурная зависимость второго момента линии протонного магнитного резонанса для поликристаллического $K_4Fe(CN)_6 \cdot 3H_2O$



Card 5/6



MIKHAYLOV, G.M.; LUNDIN, A.G.; GABUDA, S.P.; ALEKSANDROV, K.S.

Proton magnetic resonance in selenurea. Dokl. AN SSSR 141 no.6: 1406-1408 D '61. (MIRA 14:12)

1. Institut fiziki Sibirskogo otdeleniya AN SSSR i Sibirskiy tekhnologicheskiy institut. Predstavleno akademikom V.N.Kondrat'yevym.

(Urea) (Nuclear magnetic resonance and relaxation)

LUNDIN, A. G.

"NMR-studies of the phase transitions in ferroelectrics."

report presented at the Symposium on Phase Transitions in Solids, 6th General Assembly, Intl. Union of Crystallography, Rome, Italy, 16-18 Sep 1963.

(Institute of Physics, Siberian Deparment, Academy of Sciences, Krasnojarsk, USSR)

LUNDIN, A.G.; GABUDA, S.P.

Temperature dependence of the electric field gradient in the ferroelectric $NaNO_2$. Fiz. tver. tela 5 no.7:2009-2011 Jl '63. (MIRA 16:9)

1. Institut fiziki Sibirskogo otdeleniya AN SSSR, Krasnoyarsk.
(Ferroelectric crystals) (Electric field)

GABUDA, S.P.; LUNDIN, A.G.; MIKHAYLOV, G.M.

Magnetic resonance of protons in desmine. Geokhimiia no.4: 436-439 Ap '63. (MIRA 16:7)

1. Institut fiziki, Krasnoyarsk.
(Protons) (Stilbite)
(Nuclear magnetic resonance and relaxation)

GABUDA, S.P.; LUNDIN, A.G.; MIKHAYLOV, G.M.; ALEKSANDROV, K.S.

Position of hydrogen atoms in natrolite. Kristallografiia 8 no.3:388-392 My-Je '63. (MIRA 16:11)

1. Institut fiziki Sibirskogo otdeleniya AN SSSR i Sibirskiy tekhnologicheskiy institut.

GABUDA, S.P.; GAGARINSKIY, Yu.V.; INGAKOVA, S.A.; LUNDIN, A.G.

Proton resonance in uranium peroxide hydrates. Zhur. strukt. khim. 5 no. 2:303-305 Mr-Ap '64. (MIRA 17:6)

1. Institut fiziki Sibirskogo otdeleniya AN SSSR, Krasnoyarsk i Institut neorganicheskoy khimii Sibirskogo otdeleniya AN SSSR, Novosibirsk.

GABUDA, S.P.; GAGARINSKIY, Yu.V.; LUNDIN, A.G.; MIKHAYLOV, G.M.

Magnetic resonance of F^{19} nuclei in uranium and thorium tetrafluorides. Zhur. strukt. khim. 5 no.5:789-791 S-O '64 (MIRA 18:1)

1. Institut fiziki Sibirskogo otdeleniya AN SSSR, Krasnoyarsk, i Institut neorganicheskoy khimii Sibirskogo otdeleniya AN SSSR, Novosibirsk.

L 58455-65 EWT(1)/EPA(s)-2/EEC(t) Pt-7/Pl-4 IJP(c) GG
ACCESSION NR: AP5013670 UR/0386/65/001/001/0036/0039

AUTHOR: Gavrilova-Podol'skaya, G. V.; Yudin, A. L.; Lundin, A. G. 40

TITLE: Isotopic effect in the ferroelectric $Na_3(SeO_3)_2$ 39 71 B

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 1, no. 1, 1965, 36-39

TOPIC TAGS: isotopic effect, deuterium substitution, sodium, hydroselenite, ferroelectric property

ABSTRACT: A study was made of the temperature dependence of the dielectric constant of powdered samples of $NaD_3(SeO_3)_2$ in order to explain the nature of the spontaneous polarization in this compound and determine the isotopic effect when the hydrogen is replaced with deuterium. The sodium deuteroselenite was obtained by crystallization from a solution in D_2O (99.5% pure), in which the calculated amounts of Na_2SeO_3 and D_2SeO_3 were dissolved. Tablets 1--2 mm thick and 14 mm in diameter were prepared from the $NaD_3(SeO_3)_2$ and placed between the electrodes of a parallel-plate capacitor. The capacitance was measured with the aid of a conventional bridge circuit at about 200 kcs. The measurements were made in the temper-

Card 1/2

L 58455-65

ACCESSION NR: AP5013670

ature range from -170 to 0°C. The temperature dependence of the dielectric constant of polycrystalline $NaH_3(SeO_3)_2$ has a peak at -79C, which coincides with the previously determined Curie point of this ferroelectric. The temperature dependence of the dielectric constant of $NaD_3(SeO_3)_2$ duplicates that of $NaH_3(SeO_3)_2$, but is shifted 50° in temperature, with a peak at -29C, which can be assumed to be the Curie point of the deuteroselenite. Thus, the shift of the Curie point of the hydroselenite when the hydrogen is replaced by deuterium is of the same order of magnitude as that in KH_2PO_4 (90°), KH_2AsO_4 (66.4°), and $Ag_2H_3IO_6$ (40°). It can be assumed on this basis that these ferroelectrics have a similar spontaneous-polarization mechanism in which an important role is played by the ordering of the hydrogen bonds. Orig. art. has: 1 figure.

ASSOCIATION: Institut fiziki Sibirskogo otdeleniya Akademii nauk SSSR (Physics Institute, Siberian Department, Academy of Sciences SSSR)

SUBMITTED: 18Feb65 ENCL: 00 SUB CODE: SS NP

NR REF SOV: 000 OTHER: 003

Card 2/2

L 57020-65 EWT(l)/EPA(s)-2/EWT(m)/EPF(c)/EEC(t)/EWP(t)/EWP(b) Pt-7/Pi-4/
P1-4 IJP(c) JD/WW/GG

ACCESSION NR: AP5016116 UR/0048/65/029/006/0907/0909

AUTHOR: Aleksandrov, K.S.; Gabuda, S.P.; Lundin, A.G.

TITLE: Proton magnetic resonance in ferroelectric dicalcium strontium propionate /Report, 4th All-Union Conference on Ferroelectricity held in Rostov-on-the-Don 12-18 Sept 1964/

SOURCE: AN SSSR. Izvestiya. Ser.fizicheskaya, v.29,no.6,1965,907-909

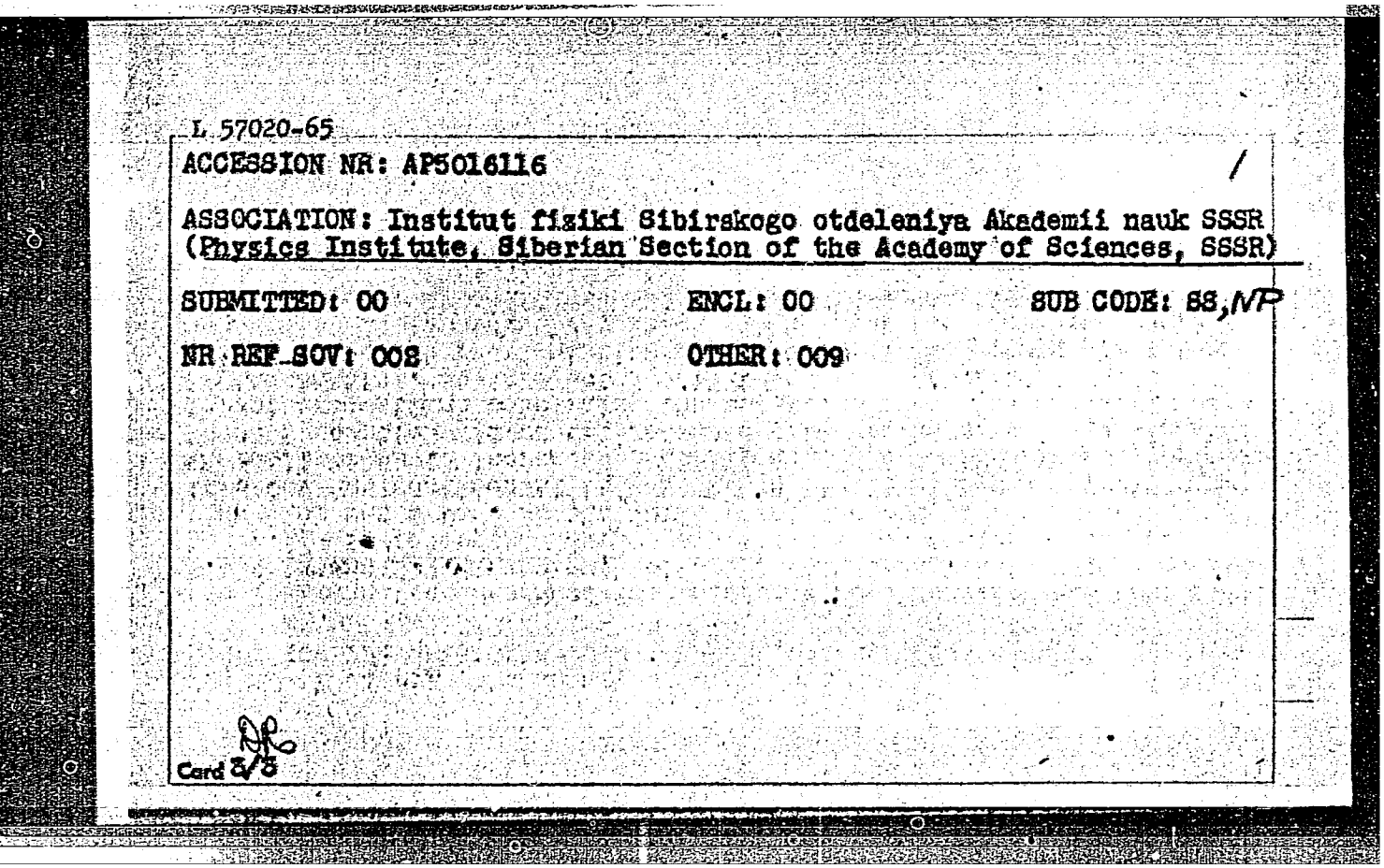
TOPIC TAGS: ferroelectric material, polycrystal, magnetic resonance, proton resonance, phase transition, calcium compound, strontium compound, organic compound

ABSTRACT: The proton magnetic resonance spectra of polycrystalline samples of $Ca_2Sr(CH_3CH_2COO)_6$ were investigated from room temperature to -196°C in a magnetic field of 3000 Oe. The measurements were undertaken to obtain information concerning the disposition of the CH_3CH_2 groups in the crystal lattice. The polycrystalline samples were obtained by evaporating solutions of calcium and strontium propionates,

Card 1/3

ACCESSION NR: AP5016116 2

and the magnetic resonance apparatus has been described elsewhere (A. G.Lundin and G.M.Mikhaylov, Pribory i tekhn.eksp.,No.2,92,1960). Above the 8.5°C ferroelectric Curie point the second moment of the absorption line was 5 Oe^2. At the Curie point the second moment increased to 8 Oe^2 and remained at this value to liquid nitrogen temperatures where it began to increase gradually with decreasing temperature. These absorption widths are compared with widths calculated with different assumptions concerning the behavior of the CH_3 and CH_2 groups in the lattice. It is concluded that the ferroelectric transition cannot be due to reorientation of the CH_3 and CH_2 groups about the C-C bonds but is probably related to the fact that the propionate ion is not planar. According to this hypothesis transitions between two equally probable nonplanar configurations would be possible above the Curie point but not below it. "The authors thank A.I.Rostuntseva for the synthesis of the compound and N.F.Kostin for the x-ray identification." Orig.art.has: 8 figures.



L 57020-65

ACCESSION NR: AP5016116

ASSOCIATION: Institut fiziki Sibirskogo otdeleniya Akademii nauk SSSR (Physics Institute, Siberian Section of the Academy of Sciences, SSSR)

SUBMITTED: 00 ENCL: 00 SUB CODE: SS,NP

NR REF SOV: 002 OTHER: 009

Card 2/3

L 57029-65 EWT(l)/EPA(s)-2/EWT(m)/EEC(t)/EWP(t)/EWP(b) Pt-7/Pl-4 IJP(c)
ACCESSION NR: AP5016117 JD/GG UR/0048/65/029/006/0910/0913
46
43
B

AUTHOR: Lundin, A.G.; Zeyer, E.P.

TITLE: Investigation of phase transitions in potassium ferrocyanide and its analogs /Report, 4th All-Union Conference on Ferroelectricity held in Rostov-on-the-Don 12-18 Sept 1964/

SOURCE: AN SSSR. Izvestiya. Ser.fizicheskaya,v.29,no.6,1965, 910-913

TOPIC TAGS: ferroelectricity, phase transformation, magnetic resonance, proton resonance, water, potassium compound, rubidium compound, iron compound, nitrogen compound, carbon compound

ABSTRACT: The proton magnetic resonance spectra of $Rb_4Fe(CN)_6 \cdot 3H_2O$ were recorded in a 3000 Oe field from room temperature to -200°C with the same apparatus that was used for similar measurements on $K_4Fe(CN)_6 \cdot 3H_2O$ (A.G.Lundin, G.M.Mikhaylov and S.P.Gabuda, Doklady AN SSSR 136, 864,1961) and the spectra of the two materials are compared. Other proton magnetic resonance data on these and other related compounds, of which some are ferroelectric and some are not, are adduced and dis-

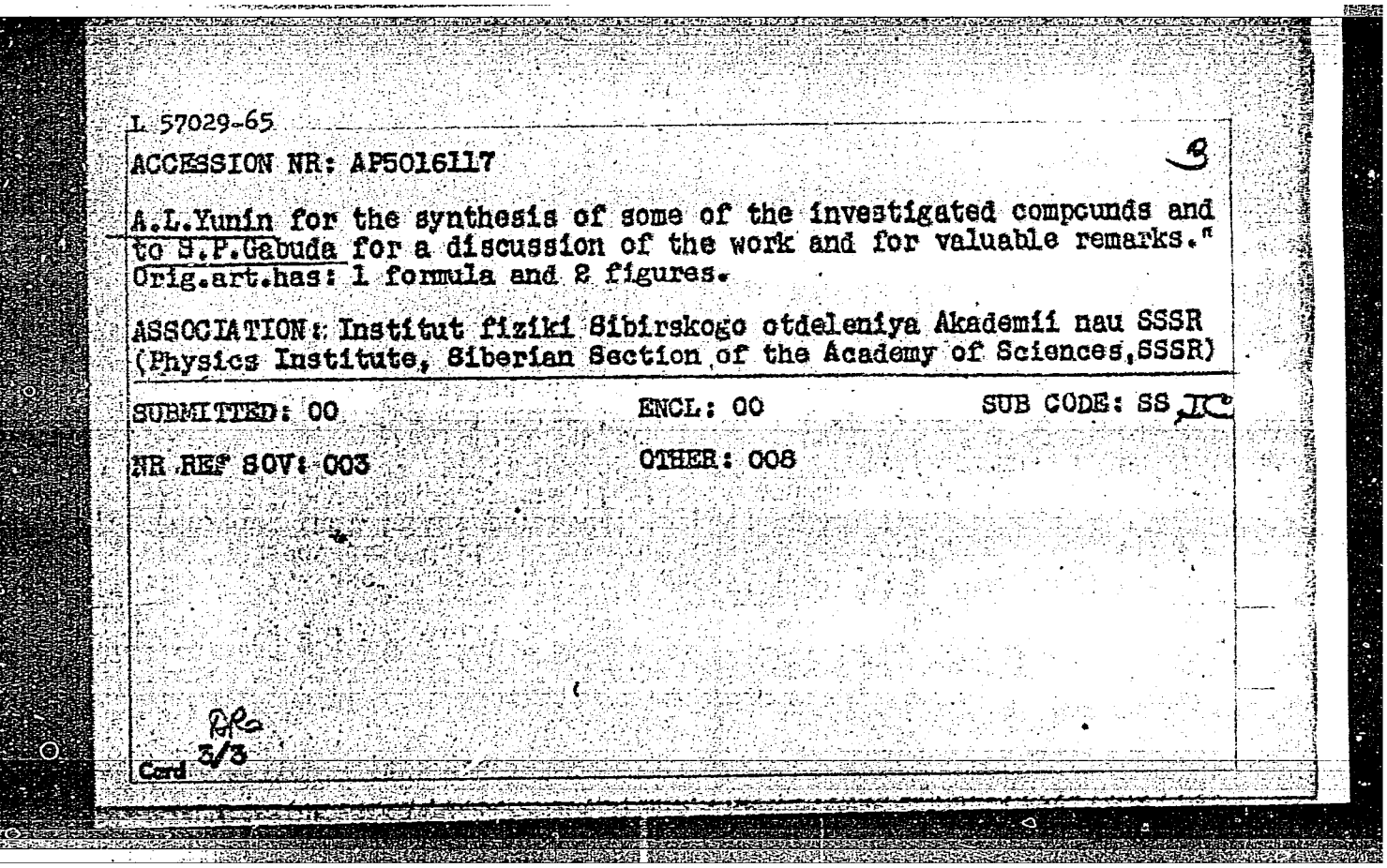
Card 1/3

L 57029-65

ACCESSION NR: AP5016117

cussed. The second moment of the absorption line of potassium ferrocyanide above the Curie point was found to be 2 Oe^2. From this it is concluded that in the paraelectric phase there is intensive reorientation of the water of crystallization molecules about more than one axis. From the fine structures of the proton magnetic resonance lines it is concluded that at room temperature the reorientation of the water of crystallization molecules is anisotropic in potassium ferrocyanide (which becomes ferroelectric at lower temperatures) and isotropic in rubidium ferrocyanide (which does not become ferroelectric). Strong interaction between the water of crystallization molecules is revealed by the magnetic resonance fine structure in $K_4Fe(CN)_6 \cdot 3H_2O$ and $K_4Mn(CN)_6 \cdot 3H_2O$, which have ferroelectric phases, and not in $(NH_4)_4Fe(CN)_6 \cdot 3H_2O$ or $Rb_4Fe(CN)_6 \cdot 3H_2O$, which do not. The adduced data and the discussion are regarded as supporting the previously advanced hypothesis that the ferroelectric polarization in compounds of the type $A_4Me(CN)_6 \cdot 3H_2O$, where A represents K or K together with NH_4, Rb or Tl, and Me represents Fe, Mn, Ru or Os, is due to ordered orientation of the water of crystallization molecules. "The authors are grateful to

Card 2/3



L 57029-65

ACCESSION NR: AP5016117

A.L.Yunin for the synthesis of some of the investigated compounds and to S.P.Gabuda for a discussion of the work and for valuable remarks."
Orig.art.has: 1 formula and 8 figures.

ASSOCIATION: Institut fiziki Sibirskogo otdeleniya Akademii nau SSSR (Physics Institute, Siberian Section of the Academy of Sciences, SSSR)

SUBMITTED: 00 ENCL: 00 SUB CODE: SS

NR REF SOV: 003 OTHER: 008

Card 3/3

L 00896-66 EWT(m)/EPF(c)/EWP(j AM

ACCESSION NR: AP5016543 UR/0056/65/048/006/1542/1544

AUTHOR: Lundin, A. G.; Zeyer, E. P.

TITLE: Nature of spontaneous polarization in ferroelectric mercurates

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 48, no. 6, 1965, 1542-1544

TOPIC TAGS: ferroelectricity, ferroelectric mercurate, spontaneous polarization

ABSTRACT: To determine whether hydrogen plays an essential role in the mechanism of spontaneous polarization of ferroelectric mercurates, the authors studied proton resonance in polycrystalline specimens of ferroelectric tetramethylammonium trihalomercurate ($N(CH_3)_4HgX_3$ where X is Cl, Br, or I) in the temperature interval in which an appreciable change of the rate and of the character of the reorientation of the $[N(CH_3)_4]^+$ ion is observed. The measurements were made with the spectrometer for broad lines described earlier by one of the authors (Lundin, with G. M. Mikhaylov, PTE no. 2, 90, 1960). In addition, the spectrum of $N(CH_3)_4HgCl_3$ was recorded at 4.3K by Yu. S. Karimov at the Institut fizicheskikh problem (Institute of Physical Problems) AN SSSR. The results show that hydrogen does not play an appreciable role in the spontaneous polarization of these ferroelectrics. These results do not contradict those obtained by J. G. White (Acta Cryst. v. 16, 397,

Card 1/2

L 00896-66

ACCESSION NR: AP5016543

1963). Orig. art. has: 2 figures.

ASSOCIATION: Institut fiziki Sibirskogo otdeleniya Akademii nauk SSSR (Institute of Physics of the Siberian Department, Academy of Sciences, SSSR)

SUBMITTED: 24Nov64 ENCL: 00 SUB CODE: SS

NR REF SOV: 001 OTHER: 006

Card 2/2

ACC NR: AP6018555 SOURCE CODE: UR/0181/66/008/006/1889/1894

AUTHOR: Lundin, A. G.; Gabuda, S. P.

ORG: Institute of Physics, SO AN SSSR, Krasnoyarsk (Institut fiziki SO AN SSSR)

TITLE: Anisotropy of magnetic screening of nuclei of F^{19} in single-crystal LaF_3

SOURCE: Fizika tverdogo tela, v. 8, no. 6, 1966, 1889-1894

TOPIC TAGS: lanthanum compound, fluoride, nmr spectrum, temperature dependence, magnetic anisotropy, chemical bonding, conjugated bond system

ABSTRACT: The magnetic screening was investigated by plotting the nuclear magnetic resonance spectra in cylindrical single-crystal LaF_3 cut with axes parallel to [100] and [001]. The NMR spectra were obtained with a modified JNM-3H-60 BL-2 spectrometer at fixed frequencies 15 and 37 Mc at temperatures from room temperature to -100C. The rate of variation of the magnetic field was ~2 Oe/min. The shift of the NMR spectrum components was determined by using liquid C_6F_6 as a standard. The magnetic screening constants of the nuclei of the two nonequivalent groups of fluorine atoms in the structure were determined and used to obtain certain parameters of the electronic structure of the crystal. These include the relations between the screening-tensor components and the charge matrix elements, the populations of the orbitals of the valence shell of fluorine, the degree of ionicity of the σ coupling and others. It is shown that the σ bonds of LaF_I are strongly ionic (up to 94%), and the covalent component of the LaF_I bond is made up almost entirely by π bonds. Consequently the

Card 1/2